

## Agile M.S. in Computer Science

*Prereqs: AIM 5002 and 5001 or COM 5000, 5001 and 5002*

Artificial Intelligence (AI) is an interdisciplinary field, integrating knowledge and methods from computer science, mathematics, philosophy, psychology, economics, neuroscience, linguistics,





The course provides students with a comprehensive understanding of the mathematical aspects of computer science as well as their application. Throughout the course, students will learn the theoretical foundations of computer science and gain knowledge with various topics including algorithms, computational models, and the fundamental principles underlying computation.

This advanced-level course explores innovative and cutting-edge programming concepts, languages, and methodologies. The course is designed for students who already possess a strong foundation in traditional programming paradigms and are eager to explore the latest trends and advancements in the field. Throughout the course, students will be exposed to various programming languages, frameworks, and tools to understand how they enable developers to tackle modern-day challenges effectively.

An operating system (OS) is a resource manager that provides an environment for users and applications to cooperate and share computer system resources. Understanding how operating systems function allows engineers to develop more effective applications, better utilize system functionality, and improve performance. In this course, students learn how operating systems manage resources, including CPU, memory, and devices. The course also covers the objects and functions performed by operating systems, including process, thread, memory management, system calls, file system management, and interprocess communications.

The rapid expansion of ubiquitous computing means that humans interact with computer technologies in all aspects of their lives. This presents numerous opportunities—and pitfalls—with regards to computer design. This course introduces students to the quantitative and qualitative study of Human Computer Interaction (HCI). We survey various approaches to studying HCI, including Interaction Design, Graphical Design, Educational Design, Human Robot Interaction, and Games. We also consider how the study of HCI influences the design of effective computer technologies.

Rapid developments in mobile technologies and systems—like low-cost and energy-efficient CPUs, new applications, increased internet speed, and advances in human-computer interfaces—have made mobile computing an indispensable part of human life. This course provides a broad introduction to the field of mobile computing and mobile application development. Topics include networking, operating systems, database, mobile security, and app development. Students also gain hands-on experience using mobile simulators and apps.

The course provides students with a deep understanding of the principles, techniques, and processes involved in software engineering. The course covers the foundational concepts and methodologies necessary for the development of high-quality software systems. It emphasizes the systematic approach to software development and project management, focusing on the entire software lifecycle from requirements gathering to deployment and maintenance.

The course provides students with a comprehensive understanding of the fundamental principles and techniques used in computer graphics. It explores the creation, manipulation, and rendering of digital images and visual content using software and hardware technologies.

Throughout the course, students will learn the theoretical foundations of computer graphics and gain hands-on experience with various software and hardware technologies used in the field.

Mth source.

